arabino nucleotides, 2'-O-CH_3 arabino nucleotides and 2'-dehydro-2'-CH_3 arabino nucleotides. A more preferred group include 2'-F arabino nucleotides, 2'-OH arabino nucleotides and 2'-O-CH_3 arabino nucleotides. A further preferred group include 2'-F arabino nucleotides and 2'-OH arabino nucleotides. Particularly preferred are 2'-F arabino nucleotides.

[0032] Particularly preferred oligonucleotides of the invention include selecting the nucleotides of the first portion of nucleotides to be 2'-SCH_3 ribonucleotides, 2'-NH_2 ribonucleotides, 2'-NH(C_1-C_2 alkyl) ribonucleotides, 2'-N(C_1-C_2 alkyl)$_2$ ribonucleotides, 2'-CH_3 ribonucleotides, 2'-$CH{=}CH_2$ ribonucleotides or 2'-C≡CH ribonucleotides and selecting the nucleotides of the further portion of nucleotides to be 2'-F ribonucleotides, 2'-O-(C_1-C_6 alkyl) ribonucleotides or 2'-O-(C_1-C_6 substituted alkyl) ribonucleotides wherein the substitution is C_1-C_6 ether, C_1-C_6 thioether, amino, amino(C_1-C_6 alkyl) or amino(C_1-C_6 alkyl)$_2$.

[0033] Further preferred oligonucleotides of the invention include selecting the nucleotides of said first portion of nucleotides to be 2'-CN arabino nucleotides, 2'-F arabino nucleotides, 2'-Cl arabino nucleotides, 2'-Br arabino nucleotides, 2'-N_3 arabino nucleotides, 2'-OH arabino nucleotides, 2'-O-CH_3 arabino nucleotides or 2'-dehydro-2'-CH_3 arabino nucleotides and selecting the nucleotides of the further portion of nucleotides to be 2'-F ribonucleotides, 2'-O-(C_1-C_6 alkyl) ribonucleotides or 2'-O-(C_1-C_6 substituted alkyl) ribonucleotides wherein the substitution is C_1-C_6 ether, C_1-C_6 thioether, amino, amino(C_1-C_6 alkyl) or amino(C_1-C_6 alkyl)$_2$.

[0034] Particularly preferred are oligonucleotide of the invention where each nucleotide of the first portion of nucleotides is a 2'-F arabino nucleotides or a 2'-OH arabino nucleotides and each nucleotide of the further portion of nucleotides is a 2'-O-(C_1-C_6 substituted alkyl) ribonucleotide

wherein the substitution is C_1-C_6 ether, C_1-C_6 thioether, amino, amino(C_1-C_6 alkyl) or amino(C_1-C_6 alkyl)$_2$.

[0035] In further preferred oligonucleotides of the invention the further portion of the plurality of nucleotides comprise at least two nucleotides joined together in a contiguous sequence that is position at the 3' terminus end of the oligonucleotide. In an additional preferred oligonucleotide of the invention the further portion of said plurality of nucleotides comprise at least two nucleotides joined together in a contiguous sequence that is position at the 5' terminus end of the oligonucleotide. In even further preferred oligonucleotides of the invention the further portion of the plurality of nucleotides comprise at least two nucleotides joined together in a contiguous sequence that is position at the 3' terminus end of the oligonucleotide and at least two nucleotides joined together in a contiguous sequence that is position at the 5' terminus end of the oligonucleotide. Preferred linkages for joining these nucleotides together in an oligonucleotide of the invention include 2'-5' phosphodiester linkages, 3'-methylenephosphonate linkages, Sp phosphorothioate linkages, methylene(methylimino)linkages, dimethyhydrazino linkages, 3'-deoxy-3'-amino phosphoroamidate linkages, amide 3 linkages or amide 4 linkages. Particularly preferred joining linkages are 2'-5' phosphodiester linkages, 3'-methylenephosphonate linkages, Sp phosphorothioate linkages or methylene(methylimino) linkages.

[0036] In further preferred oligonucleotides of the invention, nucleotides for use in the further portion of nucleotides comprises 2'-alkylamino substituted nucleotides located at the 3' terminus, the 5' terminus or both the 3' and 5' terminus of the oligonucleotide. Particularly preferred are 2'-O-alkylamines such as 2'-O-ethylamine and 2'-O-propylamine.

[0037] Further oligonucleotides of the invention comprise oligonucleotides made up of a plurality of linked nucleotides at least two of which comprise nucleotides that are not 2'-deoxy-erythro-pentofuranosyl nucleotides and that have a C2' endo type pucker or an O4' endo type pucker and that are joined together in a contiguous sequence and other nucleotides comprising nucleotides that have a C3' endo type pucker. Preferred are oligonucleotides having the C3' endo type pucker nucleotides joined together in a contiguous sequence that is positioned 3' to the contiguous sequence of the nucleotides having the C2' endo type pucker or O4' endo type pucker. Further preferred oligonucleotides are oligonucleotides wherein the nucleotides having the C3' endo type pucker are joined together in a contiguous sequence that is positioned 5' to the contiguous sequence of having the C2' endo type pucker or O4' endo type pucker. Additional preferred oligonucleotide are oligonucleotides where a portion of the nucleotides having the C3' endo type pucker are joined together in a contiguous sequence that is positioned 3' to the contiguous sequence of nucleotides having the C2' endo type pucker or O4' endo type pucker and a further portion of nucleotides having the C3' endo type pucker are joined together in a contiguous sequence that is positioned 5' to the contiguous sequence of nucleotides having the C2' endo type pucker or O4' endo type pucker.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] Figure 1 illustrates a preferred group of nucleotide fragments for use in the B-form portion (the C2' endo / O4' endo portion) of oligonucleotides of the invention.

[0039] Figure 2 illustrates a preferred group of nucleotide fragments for use in the A-form portion (the C3'endo portion) of oligonucleotides of the invention.